

NOAA/NMFS FY01 Supplemental Funding Request

Conservation of Columbia Basin Salmonids: Implementing the Basin-wide Salmon Recovery Strategy

Many salmon and steelhead populations in the Columbia River Basin will be extinct or nearly so by the end of this century, unless the region makes major changes to improve their survival. Nine federal agencies (the Federal Caucus) have developed a “Basin-wide Salmon Recovery Strategy” (also called the “All-H Paper”) to implement their fundamental responsibility under the Endangered Species Act (ESA) to prevent extinction and foster recovery of ESA listed species. This comprehensive approach will be implemented through the NOAA/NMFS Biological Opinion on operation of the Federal Columbia River Power System (FCRPS) and in other biological opinions issued by NMFS, including those addressing habitat, harvest, and hatchery actions.

The federal agencies are requesting about \$280M in FY01 supplemental funds to implement the comprehensive strategy. The supplemental funding needed is above and beyond FY01 appropriated funds (or expected funding) and funding from Bonneville Power Administration (BPA) from power revenues. Supplemental funding is a critical factor in the success of the Columbia Basin salmonid recovery strategy.

NOAA/NMFS Request

NOAA/NMFS expects significant new demands upon its current and anticipated internal science and management programs in order to meet the expected commitments for implementing an aggressive All-H strategy in the coming year (and out years) in the Columbia basin. Since NOAA/NMFS is called upon to determine the ESA acceptability of the initiatives in each of the four H’s for contributing to salmon recovery, the demand side is very high, comprehensive and unavoidable. Meeting that demand with adequate capacity is essential to the success of the effort.

Implementing the NOAA/NMFS components of the recovery strategy will require \$70.4M in FY01 supplemental funding for FY01 and beyond. This is to augment \$22.8M of FY01 (expected) funding that NMFS will use for Columbia Basin salmonid recovery efforts and operation of Mitchell Act hatcheries. The NOAA/NMFS request is divided along the 4 H’s in the recovery strategy (Habitat, Hydropower, Harvest and Hatcheries) along with a Recovery Planning and a Research, Monitoring and Evaluation component.

NOAA/NMFS FY01 Supplemental Funding Request (for FY01 and annually thereafter):

I. NMFS Habitat	\$25.7M
II. NMFS Hatcheries	\$15.0M
III. NMFS Harvest	\$ 3.0M
IV. NMFS Hydro	\$ 5.0M
V. Recovery Planning	\$ 2.5M
VI. Research, Monitoring & Evaluation	<u>\$19.2M</u>
Total	\$70.4M

Each of these areas are described below.

I. NMFS Habitat - (\$25.7M and 103 FTEs) . The supplemental funding is needed to implement the Habitat component of the "All H" recovery strategy for the Columbia/Snake basin salmonids, and includes coverage of new workload related to implementation of the Interior Columbia Basin Ecosystem Management Plan (ICBEMP) encompassing federal lands. The most important habitat activities are restoration of stream flows and water quality, removal of passage barriers, and restoration and protection of quality spawning and rearing habitat. Current resources available for these activities are token, and a huge jump-start is needed throughout the basin. Habitat planning and assessment activities also are critical for establishing long term management plans for all waterways in the Columbia Basin. The increased funding would augment existing NMFS capacity to support sub-basin planning and assessments required in the recovery strategy. Most funding is for FTEs to facilitate actions by participating in assessment and planning, carrying out efficient ESA consultation, overseeing implementation, and ensuring accountability through monitoring and evaluation. Contract funding is requested for support to develop detailed performance standards, scientifically credible methodologies and program criteria to guide actions. On-the-ground actions are expected to be funded through other agencies' budgets.

I.A. Sub-basin planning: There are thirty-plus sub-basins in which assessments and plans need to be developed. Once sub-basin assessments and plans are in place, watershed-level plans and assessments involving local parties will be needed and ESA coverage under sections 7 or 10 will be required. One FTE per state plus basin-wide coordinator (total 4 FTE, \$600K) are needed.

I.B. Water diversion problems in priority sub-basins: Water diversion related-problems (flows, screening and passage) will be corrected in priority sub-basins (3 each year). The habitat strategy relies on correcting water diversion-related problems to provide immediate biological gain for listed species in the short term. NMFS will need to participate with the action agencies in assessing problems, developing strategies, providing criteria for screening and passage solutions and methodologies for in stream flow needs, and working with action agencies and non-federal interests to implement solutions. 8 FTEs (\$1,200K) are needed to implement this activity.

I.C. Flow and TMDL demonstration projects: 6 FTEs (\$900K) are needed for demonstration project oversight, section 7 consultation and integration with state and regional efforts.

I.D. Habitat acquisition/conservation: 1 FTE (\$150K) and \$100K (annual contractual support) is needed to work with BPA and regional processes to identify criteria for and guide habitat acquisition and conservation program, complete programmatic consultation.

I.E. Agricultural riparian buffers: 4 FTEs (\$600K) are needed to work with Farm Service Administration, BPA, states and non-government interests to integrate federal agricultural incentive programs, cooperate with BPA on permanent habitat protection, and provide ESA consultation.

I.F. Estuary: 4 FTEs (\$600K) are needed to coordinate with LCREP and participate in refining LCREP plan; liaison with Corps, ports, states and others; oversee habitat inventory and physical and biological modeling; develop restoration criteria for Lower Columbia/estuary habitat protection; support monitoring and research.

I.G. Implementation coordination: 4 FTEs (\$600K) and \$150K annual contract funding is needed for 1) Federal Habitat Team policy liaison and program oversight; 2) Federal Habitat Team participation and oversight and support for monitoring and evaluation; 3) development of performance standards; and 4) programmatic ESA consultation and streamlining.

I.H. ICBEMP Implementation of the Interior Columbia Basin Ecosystem Management Plan (ICBEMP) is an essential element for success of the All H recovery strategy in the habitat arena. To fulfill its ESA responsibilities related to implementation of ICBEMP in Idaho, Washington, and Oregon, NMFS will need FTEs and funding to augment existing staff and establish new field offices. The new staff would be primarily biologists, hydrologists, and GIS experts enabling NMFS to participate in the ICBEMP hierarchical analyses, development of tools for project planning, implementation and oversight, and monitoring on each land management unit with listed anadromous fish or designated critical habitat. The proposed outcome-based approach outlined in the ICBEMP SDEIS largely avoids or defers setting specific activity-prescriptions and specific watershed objectives. Implementation of the SDEIS would therefore rely heavily on subsequent mid- and fine-scale analyses and tools to direct land management actions affecting listed salmon and steelhead. These analyses and tools include, for instance: sub-basin review, EAWS, development of WCIs and application to project design, and RCA delineation. The projected staffing (below) is needed for NMFS to contribute technical expertise and ESA oversight to the development of the analyses and tools, action planning, monitoring, and coordination with/funding of non-Federal components of watershed recovery for each land management unit. The staffing would thus enable NMFS to fully meet its responsibility to ensure projects designed under ICBEMP consistently meet ESA requirements and, in concert with adjacent non-Federal activities, promote recovery of the 8 Evolutionarily Significant Units (ESUs) of listed steelhead within the planning area. The activity level described in the SDEIS demands that NMFS achieve critical staffing levels to adequately cover the implementation of

ICBEMP on the land management units within the range of listed salmon and steelhead. This will require an additional 52 FTEs (\$8,000K).

I. I. Habitat Characteristics and Salmon Productivity Research NMFS scientists need to focus research on several areas in order to provide needed information on what habitat characteristics are needed for optimal salmon productivity. This research includes the effects of riparian fencing on re-vegetation; the effects of road maintenance on sediment delivery; the effects of headwater actions on downstream habitats; the effects of flow levels on habitat attributes; the effects of nutrient recycling; and the effects of stress and disease interactions. 12 FTEs and \$4,000K are needed for this research component.

I.J. Ocean/Estuarine Conditions Recent data analyses demonstrate that salmonid recovery is dependent on estuarine survival and dramatically affected by early estuarine/ocean survival. NMFS scientists need to focus research on factors affecting juvenile survival in the estuary including how hydropower operations affect downstream estuarine conditions, the fresh water plume extending into the Pacific Ocean, the effects of the freshwater-saltwater transition, and habitat improvements within the Columbia River estuary needed for recovery. This research will provide an improved understanding of the natural (water temperature and salinity, atmospheric conditions, etc.) and anthropogenic (habitat loss, chemical contaminants, nutrient inputs, flow alterations) factors that influence survival of juvenile salmon in the estuarine and early ocean environment. In order to monitor and evaluate upriver recovery measures, it is essential to understand the ecological linkages in the estuary and nearshore ocean environment and how they work to shape survival and year-class strength. Because recruitment to the adult stage is predicated on successful survival during the critical transition period from freshwater to saltwater, understanding the mechanisms and factors that control estuarine and early ocean survival will help the resource manager to discriminate between natural variability in populations and responses to anthropogenic alteration. Juvenile salmonids will be collected in estuaries and at sea to provide information on distribution, abundance, migration patterns, habitat utilization patterns and timing of entry into estuaries and ocean. Biological specimens will be analyzed for growth, condition, parasite loads, disease, and stomach contents. The biological and environmental condition and riverine/oceanographic data in the estuary and the plume will be analyzed over several years to provide necessary information on juvenile survival. Commercial fishing vessels (purse seines and mid-water rope trawls) will be chartered and re-rigged as necessary to sample salmonids at a variety of depths. Sampling will occur at standard stations as well as at readily identifiable oceanographic features (fronts, eddies) during spring and summer off Oregon and Washington. 8 FTEs and \$8,800K annually is needed for this long term research effort.

II. NMFS Hatcheries - (\$15.0M and 20 FTEs). The option recommended by the Basin-wide Salmon Recovery Strategy has two primary components. First is the reduction and/or elimination of the negative impacts caused by traditional production hatcheries on wild stocks, an undertaking referred to as hatchery reform. Second is the selective use of conservation hatcheries, using genetically appropriate broodstock, to stabilize and/or bolster weak

populations, a conservation program dubbed as the “safety-net” initiative. Although the use of hatchery production cannot serve as a long-term substitute for restoring natural production, the use of conservation hatcheries to support weak stocks will provide a hedge against extinction risks in the near term and also may provide recovery benefits to listed populations.

The additional funding requested here is needed to develop and implement these reforms in two categories. First, NMFS will need to work closely with States, tribes, and other federal agencies to develop HGMPs, which will be required for all salmonid facilities to ensure that activities will minimize the negative effects of hatchery operations on wild fish. The cost accruing to NMFS will largely involve additional coordination, analysis, research, monitoring and evaluation of HGMPs and related risk-benefit analysis. Second, the facilities and programs operated by the states and tribes with funding provided through NMFS pursuant to the Mitchell Act will themselves need reforms, including substantial capital improvements. These improvements will include facility redesign and improvements as necessary to continue to fulfill their mitigation mandates while improving their capacity to supplement weak stocks, a mission for which the facilities were not initially designed. Science efforts would include captive rearing research, assessments of hatchery/wild fish interactions (including genetic and ecological effects), and evaluation of supplementation.

II.A. Implementing and monitoring hatchery reforms: 8 FTEs (\$1,200K) are needed to enable NMFS to identify specific hatchery reforms needed for programs throughout the basin; develop HGMPs for Mitchell Act facilities; and review, monitor, and evaluate reforms for all other facilities operated in the basin. Hatchery reforms will be pursued in the context of Hatchery and Genetic Management Plans. The HGMP is a tool for defining goals and objectives of a particular hatchery, and the specific means for implementing them. Each HGMP will ensure that genetic broodstock selected is appropriate, the fish are produced and released in the appropriate manner, that the program minimizes the potential for adverse ecological effects on wild populations, and that it is integrated into basinwide strategies to meet objectives of the All H recovery strategy.

II.B. Hatchery science effort: 9 FTEs (\$1,350K) and \$4,000K (capture weirs and research facility sites -- tanks, water supply, raceway modifications, ponds, equipment, etc.) are needed for NMFS research on captive rearing techniques; monitoring and evaluation of hatchery effects on wild fish; assessing the spawning effectiveness of hatchery fish relative to wild fish; understanding hatchery/wild fish interactions; genetic and ecological interactions studies; monitoring and evaluating the effects of hatchery reforms; and conducting risk assessments. Minimizing adverse genetic and ecological effects of production hatcheries will likely yield a measurable biological benefit to wild stocks, although it will be difficult to demonstrate the relationship in the near term. By using adaptive management techniques, it will be possible to measure the benefits accruing to wild stocks through reform of production facilities over time.

II.C. Mitchell Act facility and program reforms: 3 FTEs (\$450K) and \$8,000K in construction funds are needed annually for capital construction and modifications at Mitchell Act hatcheries. Specifics will vary by facility, but will include such reforms as pond modifications as may be needed to implement new rearing strategies, new brood stock acquisitions, acclimation ponds,

and other capital investments needed to implement hatchery reforms at Mitchell Act facilities. Minimizing adverse genetic and ecological effects of production hatcheries will likely yield a measurable biological benefit to wild stocks, although it will be difficult to demonstrate the relationship in the near term. By using adaptive management techniques, it will be possible to measure the benefits accruing to wild stocks through reform of production facilities over time.

III. NMFS Harvest - (\$3.0M and 5 FTEs). The overall objectives of the harvest strategy are to buy time for other recovery programs and measures to take effect. It seeks to preserve at least some fishing, particularly for tribal fisheries, provided that doing so does not undermine the overall recovery effort. It relies upon full implementation of the 1999 Pacific Salmon Treaty Agreement. It further calls for the development of a sustainable fishing strategy for the long term, with particular emphasis on the development and deployment of selective fisheries.

The biological analyses confirm that harvest has ongoing effects on the performance of listed species, in varying amounts depending on the particular ESU. It also confirms that additional harvest reductions or moratoria are unlikely, by themselves, to result in recovery for most ESUs, since harvest impacts already have been greatly reduced to very low levels. Conservative harvest management policies, are essential for an interim period while other programs to improve survival are put into effect. Over the long run, harvest constraints cannot be relied on to solve the fundamental problems that cause natural salmon productivity to decline yet continuing recently-imposed constraints on harvest at or near their now-reduced levels will remain an important part of the recovery effort during the rebuilding period.

The All H recovery strategy calls for constraining harvest rates on listed salmon and steelhead at or, if necessary and effective for survival and recovery, below their currently reduced rates for 10 years or until the status of listed fish can support harvest increases. In addition, for those ESUs where harvest remains a significant source of mortality, further reductions of incidental take of listed species will be pursued through additional measures, possibly including but not limited to such measures as license buy-backs, gear changes, additional time and area restrictions, and selective fishing.

To offset the economic consequences of capping harvest rates and securing additional reductions, the All H paper recommends fishery managers develop alternative fishing opportunities in places and manners that are compatible with the needs of listed fish. Toward this end, the Strategy places a strong emphasis on the development and deployment of selective fishery methods. Moving to selective fishery regimes will require the developing and testing of new fishing gear and methods in a variety of fishery circumstances. Fishery management regimes will need to be updated and/or replaced. For example, fishery sampling programs will need to move to electronic tag detection methodologies, and existing data bases and analytical techniques long used for managing non-selective fisheries will need to be improved or replaced. Improved estimates of the incidental mortalities on listed fish in selective fisheries will be essential to implementing selective fishery regimes in the context of listed fish. NMFS must play a major role in overseeing and coordinating these changes in existing management systems and the development of needed scientific information.

III.A. Selective fisheries: fishery methods and gear development: 2 FTE (\$300K) and \$1,700K (contracts) are needed annually for the costs of designing, implementing, monitoring and evaluating of various selective fishing methods and gear types in site-specific areas within the basin. Most of the on-the-ground experimentation will be done with outside contractors.

Experimental design would consist of altered gear on fishing vessels, fish wheels and weirs, and other alterations to traditional fishing gear to provide for more selectivity for non-listed species.

III.B. Selective fisheries: management tool improvements: 3 FTEs (\$450K) and \$550K (contracts) is needed for the development, testing, and implementation of new management tools and models as necessary to transition to selective fishery regimes. The analytical methodology, data base, and model development will involve use of outside contractors.

IV. NMFS Hydro - (\$5.0M and 20 FTEs). Supplemental funding is needed to augment NMFS staff and research on implementing and evaluating hydro program improvements in the Columbia/Snake basin. Funding would be used to coordinate with other agencies on implementation of the “All H” measures. Efforts would include monitoring achievement of performance measures, monitoring and evaluating passage survival and improvements, inspecting diversions and screen efficiency, and planning/conducting/overseeing passage survival and mortality research.

IV.A. Regional Forum and CBFWA Implementation . 1 FTE (\$150K) is needed to coordinate activities associated with the Regional Forum. The Forum is mechanism used to ensure coordinated implementation of the Hydro portion of the FCRPS Biological Opinion. This contractor is also responsible for representing NMFS in the Columbia Basin Fish and Wildlife Authority (CBFWA) process. The CBFWA works with the Northwest Power Planning Council and the Independent Scientific Review Group to develop annual funding recommendations for the BPA Fish and Wildlife Program. Offsite mitigation required under the FCRPS BiOp will be implemented largely through this program.

IV.B. Hydro Performance Measures. 4 FTEs (\$600K) are needed for refinement and implementation of hydro performance measures adequate to drive and assess annual implementation decisions and trigger points for drawdown or god squad (1 for SIMPAS modeling of passage effects, and 1 each for population specialists to translate between NWC’s CRI analyses and Hydro effects on Upper Col., Snake, and Mid/Low Col populations). These individuals would also be the interface between Hydro Division and technical recovery teams.

IV.C. Hydro Implementation Plans. 4 FTEs (\$600K) are needed for development, review and tracking of 1 and 5 year implementation plans for Hydro measures (supplement existing TMT and SCT staff with positions directed at annual RM&E and O&M funding processes, and puts all together into a more formalized annual review process). As currently conceived the annual assessment will need to make a determination that the plan satisfies the anticipated actions and effects that are the basis of the BiOp conclusion.

IV.D. Hydro Passage and Reservoirs. 6 FTEs (\$900K) are needed to oversee offsite mitigation directed at passage and screening, water use, and reservoir operations; and to ensure that the allocation of survival improvement to Mid-Columbia public utility districts and Idaho Power Company are realized through HCP implementation and increased participation in alternative re-licensing.

IV.E. Passage Mortality 5 FTEs (\$750K) and \$2,000K (equipment, holding facilities/labs) are needed to enhance NMFS research on passage mortality. Additional research needs to be undertaken to assess the improvements required by the BiOp in the Hydro system especially the affects on each of the ESA listed 12 ESUs to assess if/how there may be any differential passage mortality including effects from passage timing, cumulative effects of passing multiple dams, and if/how any revisions may affect overall survival of downstream migrants. Contract funds would be used for specialized equipment and supplies necessary to conduct these studies at each of the different dams in the system.

V. Recovery Planning - (\$2.5M and 4 FTEs). Under the Endangered Species Act, NMFS is responsible for developing detailed recovery plans for each ESU. NMFS intends to carry out this task in cooperation with other federal agencies, states, tribes and stakeholders. NMFS' formal recovery planning for the upper Willamette and lower Columbia ESUs is well underway and NMFS is initiating formal recovery planning for interior Columbia Basin ESUs as one of the next steps for implementing the FCRPS biological opinion.

Recovery plans set biological recovery goals (or de-listing criteria) and the specific actions needed to achieve those goals. The ESA also requires that recovery plans include an estimate of the cost of needed actions. NMFS has focused its efforts first on the technical tasks involved in recovery planning for salmon and steelhead. Completion of these tasks will aid planners in identifying and prioritizing actions that will provide the greatest returns and lead to recovery.

The first technical task is to identify the populations that make up the ESU and describe the characteristics that would allow us to conclude the populations are viable. The characteristics include abundance, spatial structure and diversity within the population, and minimum trends and productivity. Once populations are identified and described in this way, it is possible to construct different scenarios for recovery of the ESU in terms of number of populations, in what distribution and what level of abundance and productivity. It is likely that some populations will be identified as core populations, important to preserve regardless of the scenario chosen, while others may be a lower priority for immediate protection.

Another technical task is to identify factors limiting recovery. These factors are likely to differ among ESUs (for example, upriver ESUs will be more affected by hydropower operations than lower river ESUs). They may even differ among populations within an ESU (for example, a dam may block access to habitat for one population in an ESU, while urban development may be limiting the recovery of another). Technical experts can also assess habitat characteristics

throughout the range of an ESU and identify those habitats that represent productive strongholds and those that could be strongholds if targeted for restoration.

In its formal recovery planning process in the upper Willamette and lower Columbia region, NMFS has appointed a Technical Recovery Team and charged it with completing these technical tasks. NMFS expects the first three tasks (identify the populations, describe characteristics of a viable population, construct different scenarios for recovery) to be completed in 2001 for these ESUs. In the upper Columbia, a NMFS-led science team worked with the mid-Columbia Public Utility Districts to begin the first two recovery tasks (identifying populations and abundance recovery goals for them). The Northwest Power Planning Council has committed to conduct sub-basin assessments throughout the Basin, which would accomplish the technical tasks of assessing habitat and characterizing biological and ecological conditions in sub-basins. In the likely event that sub-basin assessments and plans precede TRT determinations, NMFS hopes that the TRTs can rely and build on the sub-basin assessments.

With these processes in place, the task will still remain to set biological recovery goals for ESUs in the Snake River and for steelhead in the mid-Columbia region. NMFS is working with the federal agencies, the Council and others to determine how best to accomplish this task.

Completion of these technical tasks throughout the basin will provide much of the information needed to develop a plan of action that will lead to recovery. NMFS and the federal agencies recognize there are already a number of state and local processes in place working on local recovery plans. As it moves forward to develop recovery plans using this technical information, NMFS intends to rely on existing processes and institutions. The sub-basin assessment and planning process proposed by the Council would include fisheries managers as well as state and local governments and watershed councils. This process may well provide the organization and include the stakeholders in the interior Columbia Basin that would enable NMFS to rely on this process to develop recovery plans. Sub-basin plans would need to be “aggregated” to ensure they will provide for the recovery of the entire ESU. NMFS will continue to discuss these issues with all of the affected entities in the Basin.

VI. NMFS Research, Monitoring and Evaluation - (\$19.2M and 20 FTEs). The goals of a comprehensive research, monitoring, and evaluation program (M&E) are four-fold: 1) Determine the current status of the listed populations; 2) Determine if management actions are being properly being implemented; 3) Determine the extent to which management actions are having the intended effects; and 4) Assess the accuracy of regional and federal databases on habitat quality. This will be accomplished through the development and implementation of a statistically rigorous three-tier system of data collection, analyses and reporting, and data management covering all 12 listed ESUs. Tier 1 M&E focuses on presence and absence of fish and on a minimal set of habitat variables. This level of monitoring provides information on changing habitat capacity and the linkage between habitat attributes and fish distribution. Tier 2 M&E focuses on collecting spawner abundance and habitat attributes expected to be improved by management actions. These data will provide the basis for tracking population growth rate

and habitat trends. Tier 3 M&E focuses on assessing mechanistic links between management actions and fish population responses. It is this intensive level of monitoring in which specific hypotheses regarding ecological causal relationships that will guide implementation of the highest priority recovery actions. This approach is more fully described in section 2.2.11 of the Basin-wide Salmon Recovery Strategy.

VI.A. Overall program coordination and management: 3 FTEs (Monitoring Coordinator/Lead, Data Coordinator, Administrative/Budget Analyst) and \$800K are needed to oversee the implementation of the monitoring and evaluation program, to include coordination of state and tribal participation, data compilation, and reporting.

VI.B. Tier One monitoring: 6 FTEs (3 biologist overseeing and participating in juvenile surveys; 3 biologists overseeing and participating in adult surveys) and \$6,400K (\$3,200K for adult monitoring and \$3,200K for juvenile monitoring...\$300K per ESU per life stage per year) are needed to determine presence/absence of listed species (adults and juveniles) at approximately 45 sites in each of the 12 listed ESUs; each site surveyed every 3 years. Assess/monitor status of key habitat attributes at each site.

VI.C. Tier Two monitoring: 6 FTEs (6 biologists overseeing and participating red counts, spawner counts, etc.) and \$6,000K (\$500K per ESU per year) are needed to determine abundance of listed species at 10 to 15 sites per year in each of the listed ESUs and assess/monitor the status of habitat attributes at each site.

VI.D. Tier Three monitoring: 5 FTEs (5 biologists overseeing, coordinating, and participating in studies) and \$6,000K (15 studies per year @ \$400K/year; at least one per ESU) are needed to design, oversee, and participate in detailed assessments of the effects of recovery actions; will typically require detailed experimental designs, monitoring of life-stage specific survivals, monitoring/assessment of specific habitat attributes, and rigorous statistical analyses.